

WHAT IS CLAIMED IS:

1. An image processing method of generating color material data for using a plurality kinds of color material to output an image, said method comprising the steps of:  
5     inputting an image signal; and  
       generating a combination of the color material data for the plurality kinds of color material so that a total color material use amount of the plurality kinds of color material, which is determined according to the combination  
10    of said plurality kinds of color material corresponding to the inputted image signal, meets a smooth function for the total color material use amount within a range of the image signal that can be inputted.

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2. An image processing method as claimed in claim 1, wherein said step of generating the combination  
       determines all combinations of the plurality kinds of color material corresponding to the inputted image signals,  
20     calculates the total color material use amounts for said all combinations of the plurality kinds of color material,

       determines a smooth variation of the total color material use amount to a variation of a predetermined color  
25     represented by the inputted image signal, and

       selects the total color material use amount meeting the determined smooth variation of the total color material

use amount from the determined combinations of the plurality kinds of color material,

so that the total color material use amount of the plurality kinds of color material meets the smooth function  
5 for the total color material use amount within a range of the image signal that can be inputted.

3. An image processing method as claimed in claim 1, wherein said step of generating the combination generates  
10 the combination corresponding to the inputted image signal with reference to a table, which determines the combination of the plurality kinds of color material so that the total color material use amount of the plurality kinds of color material, which is determined according to the combination  
15 of said plurality kinds of color material, meets the smooth function for the total color material use amount within a range of the image signal that can be inputted.

4. An image processing method as claimed in claim 1,  
20 further comprising the step of forming the smooth function for the total color material use amount.

5. An image processing method as claimed in claim 4, wherein said step of forming the smooth function displays  
25 function for a total color material use amount for a predetermined color on a display device and forms the smooth function based on input by an operation on the display.

6. An image processing method as claimed in claim 1, wherein colors of the plurality kinds of color material are yellow, magenta, cyan, and black.

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7. An image processing method as claimed in claim 1, wherein colors of the plurality kinds of color material are yellow, magenta, cyan, black, and light magenta having lower concentration than the magenta and light cyan having  
10 lower concentration than the cyan.

8. An image processing method as claimed in claim 1, wherein the color material is ink.

15 9. An image processing method as claimed in claim 1, wherein the color material is toner.

10. An image processing apparatus for generating color material data for using a plurality kinds of color material  
20 to output an image, said method comprising the steps of:  
input means for inputting an image signal; and  
data generating means for generating a combination of the color material data for the plurality kinds of color material so that a total color material use amount of the  
25 plurality kinds of color material, which is determined according to the combination of said plurality kinds of color material corresponding to the inputted image signal,

meets a smooth function for the total color material use amount within a range of the image signal that can be inputted.

5        11. An image processing apparatus as claimed in claim 10, wherein said data generating means

         determines all combinations of the plurality kinds of color material corresponding to the inputted image signals,

         calculates the total color material use amounts for  
10    said all combinations of the plurality kinds of color material,

         determines a smooth variation of the total color material use amount to a variation of a predetermined color represented by the inputted image signal, and

15        selects the total color material use amount meeting the determined smooth variation of the total color material use amount from the determined combinations of the plurality kinds of color material,

         so that the total color material use amount of the  
20    plurality kinds of color material meets the smooth function for the total color material use amount within a range of the image signal that can be inputted.

         12. An image processing apparatus as claimed in claim  
25    10, wherein said data generating means generates the combination corresponding to the inputted image signal with reference to a table, which determines the combination of

the plurality kinds of color material so that the total color material use amount of the plurality kinds of color material, which is determined according to the combination of said plurality kinds of color material, meets the smooth  
5 function for the total color material use amount within a range of the image signal that can be inputted.

13. An image processing apparatus as claimed in claim 10, further comprising function forming means for forming  
10 the smooth function for the total color material use amount.

14. An image processing apparatus as claimed in claim 13, wherein said function forming means displays function for a total color material use amount for a predetermined  
15 color on a display device and forms the smooth function based on input by an operation on the display.

15. An image processing apparatus as claimed in claim 10, wherein colors of the plurality kinds of color material  
20 are yellow, magenta, cyan, and black.

16. An image processing apparatus as claimed in claim 10, wherein colors of the plurality kinds of color material are yellow, magenta, cyan, black, and light magenta having  
25 lower concentration than the magenta and light cyan having lower concentration than the cyan.

17. An image processing apparatus as claimed in claim 10, wherein the color material is ink.

18. An image processing apparatus as claimed in claim 5 10, wherein the color material is toner.

19. A program read by a computer to make the computer execute an image processing of generating color material data for using a plurality kinds of color material to output 10 an image, said processing comprising the steps of:

inputting an image signal; and

generating a combination of the color material data for the plurality kinds of color material so that a total color material use amount of the plurality kinds of color 15 material, which is determined according to the combination of said plurality kinds of color material corresponding to the inputted image signal, meets a smooth function for the total color material use amount within a range of the image signal that can be inputted.

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20. A storage medium storing a program readably by a computer, the program making the computer execute an image processing of generating color material data for using a plurality kinds of color material to output an image, said 25 processing comprising the steps of:

inputting an image signal; and

generating a combination of the color material data

for the plurality kinds of color material so that a total color material use amount of the plurality kinds of color material, which is determined according to the combination of said plurality kinds of color material corresponding  
5 to the inputted image signal, meets a smooth function for the total color material use amount within a range of the image signal that can be inputted.